ARAC
Fuel Tank Inerting
Harmonization Working Group

Executive Committee Update
February 7, 2001

Bradford Moravec, Co-Chairman
Sean O'Callaghan, Co-Chairman

Agenda

- The Work Plan
- Working Group Activity
- Task Team Progress
- Major Milestones
- Summary

The Work Plan

- Deliverables
  - Recommend regulatory text that would require significantly reducing the development of flammable vapors in fuel tanks on transport category airplanes.
  - Evaluate options for implementing these new regulations.
  - Identify technical limitations for design options considered currently impractical
  - Provide guidance on analysis and testing for demonstrating certification compliance and continuing airworthiness.

- Concepts for Evaluation
  - Ground-Based Inerting
  - On-Board Ground Inerting
  - On-Board Inert Gas Generating System
  - Hybrid Systems

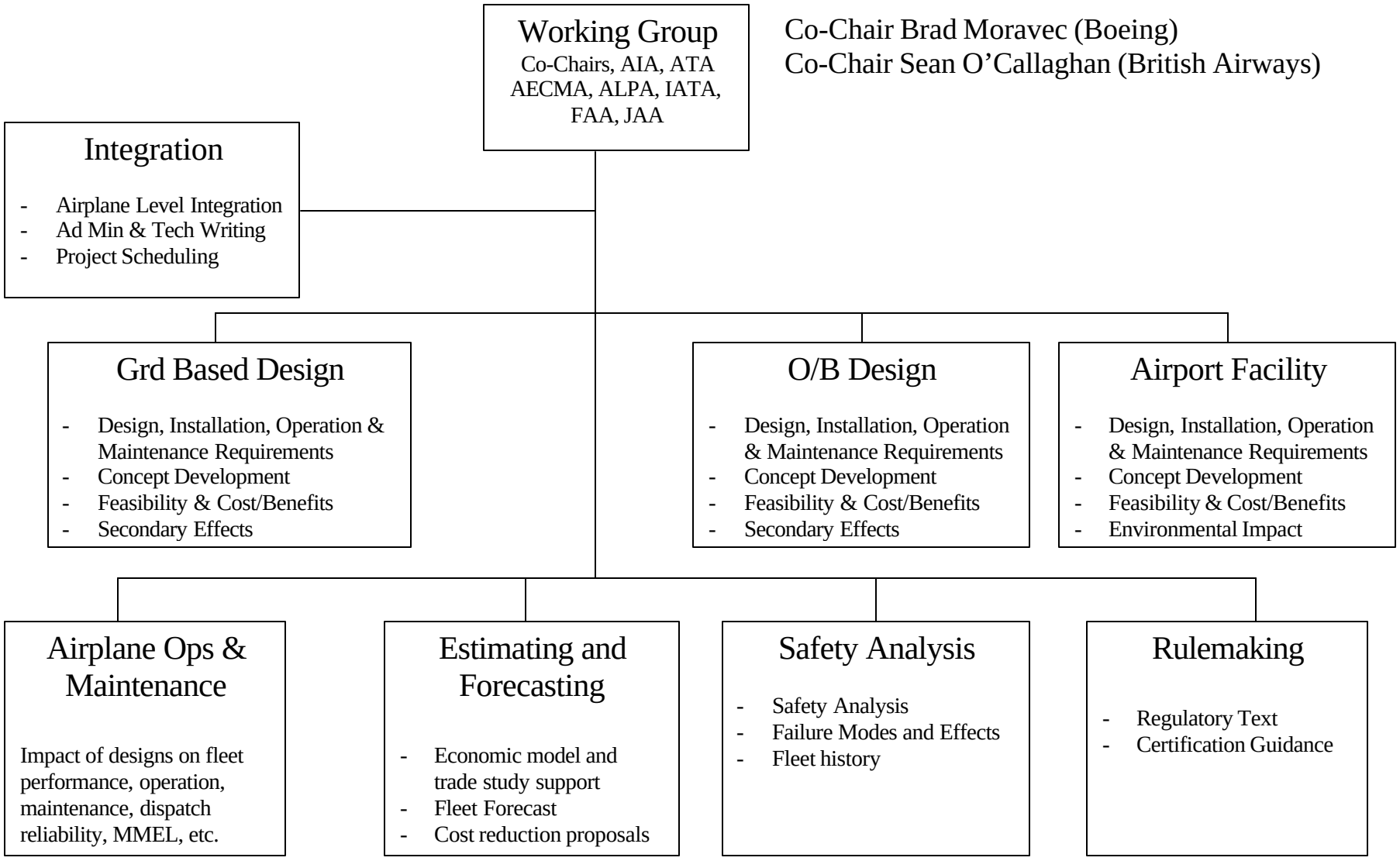
Working Group Activity

- Progress since last Ex-Com Briefing (Nov 9, 2000):
  - 3rd Working Group Meeting, London, Dec 13-14, 2000
  - 4th Working Group Meeting, Miami, Jan 23-24, 2001
  - Numerous Task Team Meetings

- Weekly Telecons with Working Group & Task Team Leaders

- New Members
  - One new Working Group Member
  - Thirteen new Task Team Members, including more European participation

ARAC FTIHWG


Working Group
Co-Chairs, AIA, ATA
AECMA, ALPA, IATA,
FAA, JAA
Co-Chair Brad Moravec (Boeing)
Co-Chair Sean O'Callaghan (British Airways)
Integration
- Airplane Level Integration
- Ad Min & Tech Writing
- Project Scheduling
Grd Based Design
- Design, Installation, Operation & Maintenance Requirements
- Concept Development
- Feasibility & Cost/Benefits
- Secondary Effects
O/B Design
- Design, Installation, Operation & Maintenance Requirements
- Concept Development
- Feasibility & Cost/Benefits
- Secondary Effects
Airport Facility
- Design, Installation, Operation & Maintenance Requirements
- Concept Development
- Feasibility & Cost/Benefits
- Environmental Impact
Airplane Ops & Maintenance
Impact of designs on fleet performance, operation, maintenance, dispatch reliability, MMEL, etc.
Estimating and Forecasting
- Economic model and trade study support
- Fleet Forecast
- Cost reduction proposals
Safety Analysis
- Safety Analysis
- Failure Modes and Effects
- Fleet history
Rulemaking
- Regulatory Text
- Certification Guidance

Ground-Based Inerting - Airplane Design

- Preliminary requirements for design, installation, operation and maintenance have been defined.
- Preliminary airplane design concepts have been developed.
- B737 Ground-Based Inerting test is underway.
- Recurring and Non-Recurring cost items have been identified.
- Sagety, risk and secondary effects are under evaluation.

On-Board Inerting - Airplane Design

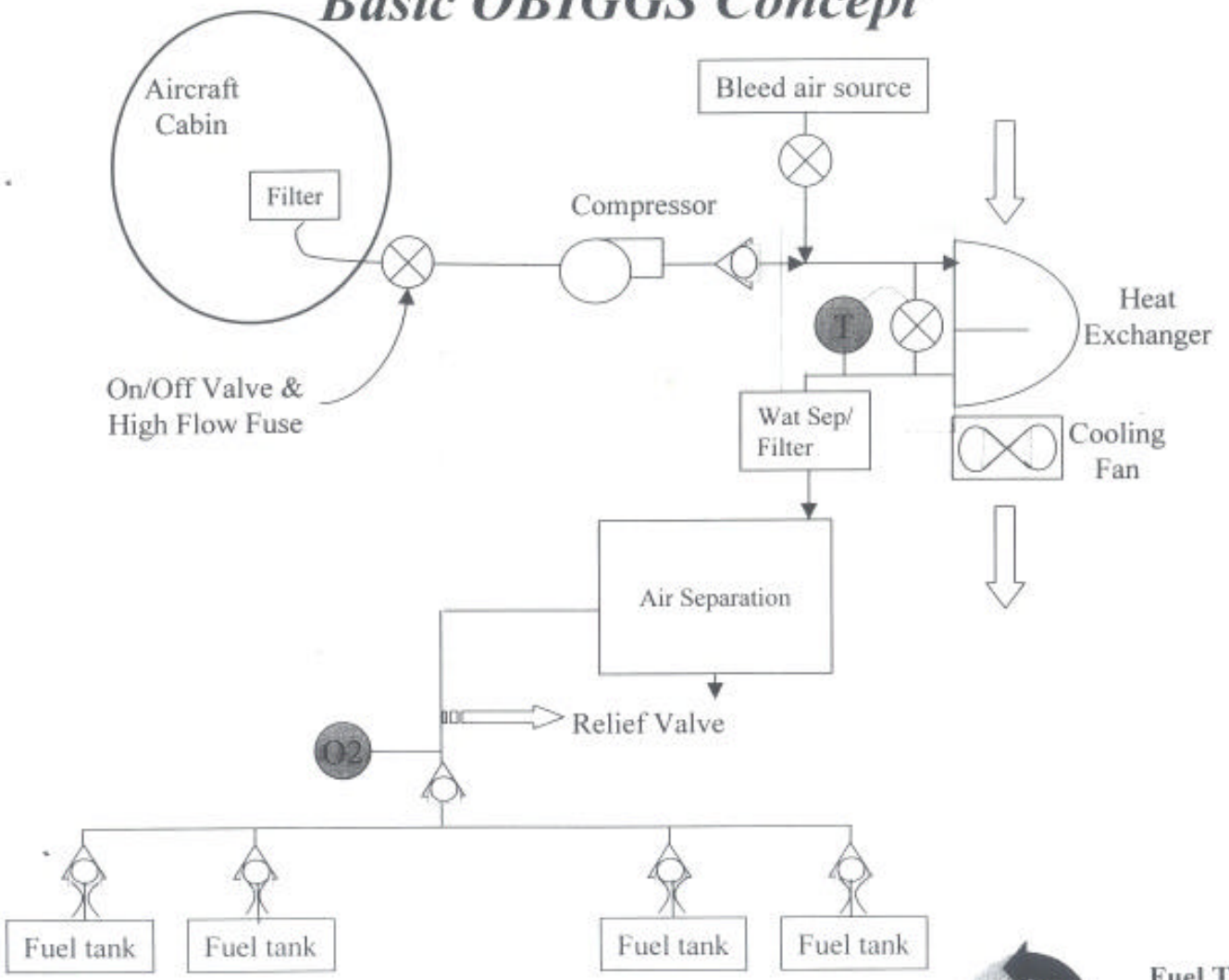
- Preliminary requirements for design, installation, operation and maintenance have been defined.

- Preliminary design concepts have been developed.
    - On-Board Inert Gas generating System
    - On-Board Ground Inerting
    - Hybrid Systems

- Recurring and Non-Recurring cost items have been identified.

- Safety, reliability, risk and secondary effects are under evaluation.

On-Board Inerting - Airplane Design
Basic OBIGGS Concept



Airport Facilities

- Three U.S. and two foreign airports have been studied in detail
- Preliminary requirements for design, installation, operation and maintenance of fuel scrubbing and ullage washing systems have been defined.
- Preliminary design concepts for fuel scrubbing and ullage washing systems have been developed.
- Recurring and Non-Recurring cost items for inerting systems within the United States and other areas of the world have been identified.

Airplane Operations and Maintenance

- Evaluating the preliminary design concepts to determine the impact on flight operations and procedures, airplane maintenance and fleet performance.

- Developing a Maintenance Plan based on the B757 which can be adapted to other aircraft models.

- Evaluating the cost impact these preliminary concepts will have on flight operations, maintenance, fleet planning, etc.

Estimating and Forecasting

- Enveloping top level models to assist the other teams in evaluating the economic impact the inerting system concepts will have on airplane design, airplane operation and airport facilities.

- Evaluating methods to minimize the overall system costs.

Safety Analysis

- Evaluating the net safety benefits of the preliminary design concepts.

- Evaluating the improved safety impact these preliminary concepts have on the service history of fuel tank explosions due to internal and external tank ignition sources and post-crash fuel tank fires.

Rulemaking and Compliance

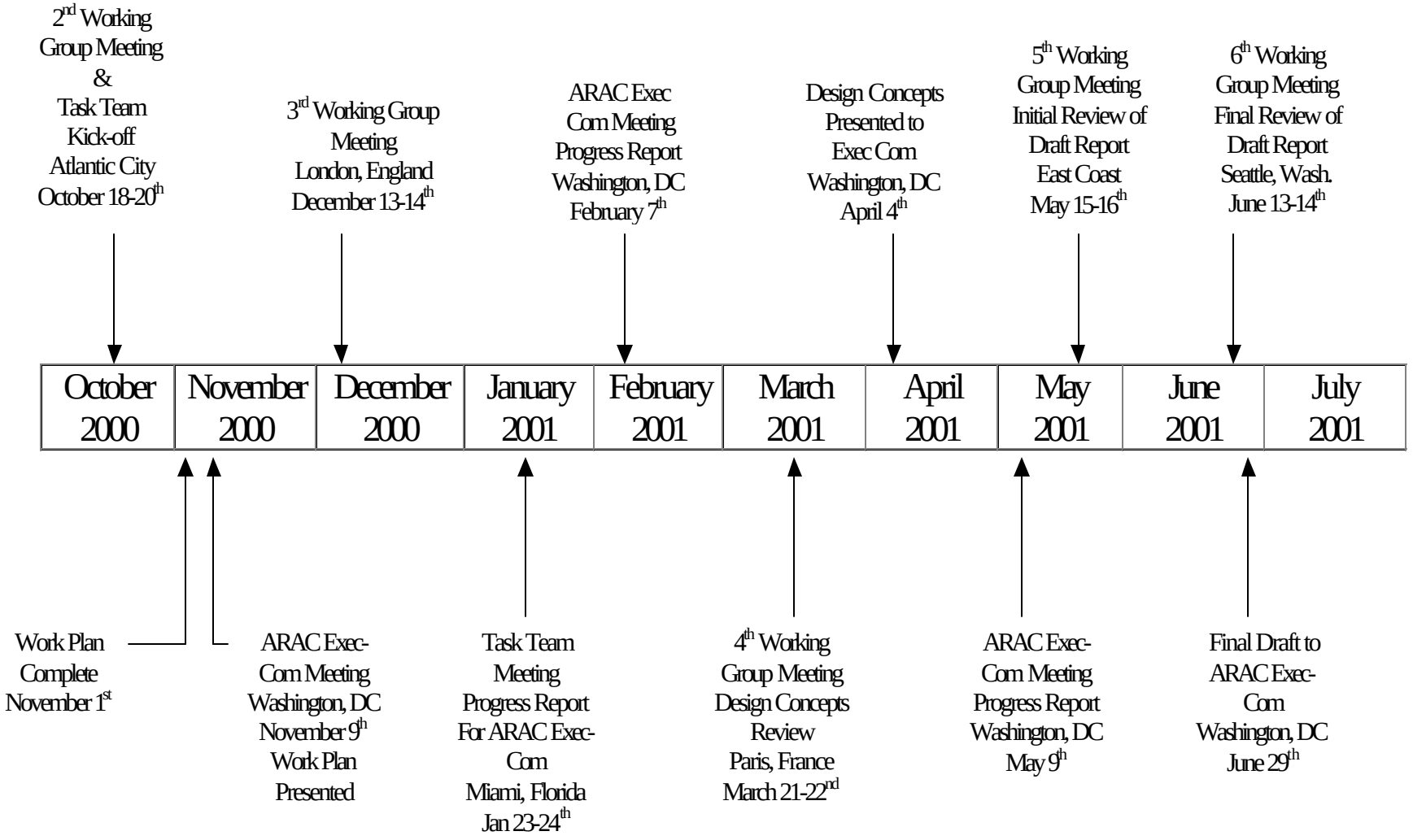
- Evaluating draft regulatory text for new rulemaking that would require eliminating or significantly reducing the flammable environment in airplane fuel tanks.

- Developing guidance material, based on the preliminary concepts, that describes the analysis and testing that may be required to show compliance with the new regulatory text.

Integration

- Published ground rules, definitions, assumptions, requirements, and schedules.
- Established an integrated schedule and critical path to meet the milestones.
- Coordinating the perpetration of the interim reports and the final document to ARAC Executive Committee.

ARAC Fuel Tank Inerting Harmonization Working Group
Major Milestones



Summary

- Working Group tasks are on schedule to meet the completion date of July 2001.
- Four productive Working Group meetings have been held to date.
- Common requirements and ground rules have been established.
- Preliminary design concepts have been established.
- Additional task group participation is being sought.
- Design Concepts will be presented at the next Ex-Com update (April 4th, 2001